Name:

at1118paper: Complete the Square (v401)

Example

By completing the square, find both solutions to the given equation:

$$x^2 - 60x = -611$$

Add $\left(\frac{-60}{2}\right)^2$, which equals 900, to both sides of the equation.

$$x^2 - 60x + 900 = 289$$

Factor the left side.

$$(x - 30)^2 = 289$$

Undo the squaring. We need to consider both $\pm\sqrt{289}$.

$$x - 30 = -17 \quad \text{or} \quad x - 30 = 17$$
$$x = 13 \quad \text{or} \quad x = 47$$

Question 1

By completing the square, find both solutions to the given equation:

$$x^2 - 34x = -120$$

Question 2

By completing the square, find both solutions to the given equation:

$$x^2 + 6x = 616$$

Question 3

By completing the square, find both solutions to the given equation:

$$x^2 + 30x \;=\; -176$$

Question 4

By completing the square, find both solutions to the given equation:

$$x^2 + 38x \;=\; -105$$

Question 5

By completing the square, find both solutions to the given equation:

$$x^2 + 24x \;=\; -63$$

Question 6

By completing the square, find both solutions to the given equation:

$$x^2 + 22x \;=\; 203$$